02/04/99

JC135 U.S. PTO

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)
(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
12407

Total Pages in this Submission
3

TO THE ASSISTANT COMMISSIONER FOR PATENTS
Box Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

SELECTIVE CALL RADIO APPARATUS WITH IMPROVED DISPLAY FUNCTION

U.S. PTO
09/244190
JC549 02/04/99

and invented by:

Kuniaki Koga

If a CONTINUATION APPLICATION, *check appropriate box and supply the requisite information:*

☐ **Continuation** ☐ **Divisional** ☐ **Continuation-in-part (CIP)** of prior application No.: _____

Which is a:

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Which is a:

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Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below

2. ☒ Specification having _____29_____ pages and including the following:

   a. ☒ Descriptive Title of the Invention

   b. ☐ Cross References to Related Applications *(if applicable)*

   c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*

   d. ☐ Reference to Microfiche Appendix *(if applicable)*

   e. ☒ Background of the Invention

   f. ☒ Brief Summary of the Invention

   g. ☒ Brief Description of the Drawings *(if drawings filed)*

   h. ☒ Detailed Description

   i. ☒ Claim(s) as Classified Below

   j. ☒ Abstract of the Disclosure

P01ULRG/REV04

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Application Elements (Continued)

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*

     a. ☒ Formal   Number of Sheets   5

     b. ☐ Informal   Number of Sheets   _____

4. ☒ Oath or Declaration

     a. ☒ Newly executed *(original or copy)*   ☐ Unexecuted

     b. ☐ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*

     c. ☒ With Power of Attorney   ☐ Without Power of Attorney

     d. ☐ *DELETION OF INVENTOR(S)*
         Signed statement attached deleting inventor(s) named in the prior application,
         see 37 C.F.R. 1.63(d)(2) and 1.33(b).

5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*
     The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under
     Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby
     incorporated by reference therein.

6. ☐ Computer Program in Microfiche *(Appendix)*

7. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*

     a. ☐ Paper Copy

     b. ☐ Computer Readable Copy *(identical to computer copy)*

     c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☒ Assignment Papers *(cover sheet & document(s))*

9. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*

10. ☐ English Translation Document *(if applicable)*

11. ☒ Information Disclosure Statement/PTO-1449   ☒ Copies of IDS Citations

12. ☐ Preliminary Amendment

13. ☒ Acknowledgment postcard

14. ☒ Certificate of Mailing

     ☐ First Class   ☒ Express Mail *(Specify Label No.):*   EL014537664US

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Accompanying Application Parts (Continued)

15. ☒ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*

16. ☐ Additional Enclosures *(please identify below):*

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate		Fee
Total Claims	18	- 20 =	0	x	$18.00	$0.00
Indep. Claims	2	- 3 =	0	x	$78.00	$0.00
Multiple Dependent Claims (check if applicable) ☐						$0.00
					BASIC FEE	$760.00
OTHER FEE *(specify purpose)*		Assignment Recordation Fee				$40.00
					TOTAL FILING FEE	$800.00

☒ A check in the amount of $800.00   to cover the filing fee is enclosed.

☒ The Commissioner is hereby authorized to charge and credit Deposit Account No.   19-1013 SSMP
as described below. A duplicate copy of this sheet is enclosed.

    ☐ Charge the amount of   as filing fee.

    ☒ Credit any overpayment.

    ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.

    ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance,
       pursuant to 37 C.F.R. 1.311(b).

Signature

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Dated: February , 1999

cc:

SELECTIVE CALL RADIO APPARATUS

WITH IMPROVED DISPLAY FUNCTION

Background of the Invention

5 ## 1. Field of the Invention

The present invention relates to a radio
selective call apparatus, and more particularly
to a selective call radio apparatus having a
function of displaying received messages on a
10 display section.

2. Description of the Related Art

In a conventional selective call radio
apparatus, received messages are stored in a
storage section in the sequence of reception or
15 in the predetermined order of priority. Instead,
the received messages are classified into
categories. The received messages stored in the
storage section are read out and displayed on a
display section upon a switching operation
20 performed by a user of the selective call radio
apparatus. Such a selective call radio apparatus
is disclosed in Japanese Laid Open Patent
Application (JP-A-Heisei 3-175827) and Japanese
Examined Patent Application (JP-B-Heisei 6-50838).

25 Dozens of messages such as news and weather
forecasts are sent per day in data receiving
service to the selective call radio apparatus

described above. However, those received messages
are no read out and displayed each time every
message is received. In ordinary use, whether any
message has arrived at the receiver is checked
5 occasionally. If there are any messages not yet
read, the messages received after the previously
read message are read out successively. Therefore,
depending on condition, tens of messages may be
read out successively. The receiver operates in
10 such a manner that it displays the received
latest message on the display section, when it
receives the latest message during the readout of
the messages.

    More specifically, as shown in Fig. 1, in
15 the conventional method, the messages are read
out in the order of the message #1 (201) → the
message #2 (202) → the message #3 (#203) → …→ the
message #m (204). If the latest message is
received during the reading of the message #m
20 (204), the latest message (205) is displayed
firstly. The next message to be displayed after
the user finishes viewing the latest message is
the message #1 (206). Since the latest message is
received, the message #1 is secondary in
25 recentness to the latest message. If the user
continues the message reading, the message #2
(207) and the message #3 (203) are displayed in

the described order.

In this way, the conventional selective call radio apparatus described above operates in such a manner that when it receives the latest

5 message during the readout of the stored messages, it displays the received latest message on the display section. In this case, however, the latest message is suddenly displayed while the user is viewing the messages. Such a display

10 operation is confusing for the user. This causes a problem in that the user cannot distinguish the latest message from other messages. That is, there is the possibility of the user mistaking the latest message for a message received in the

15 past.

Also, when the user reads out the next message after the user has viewed the latest message, the message #1 is displayed again, regardless of whether the user had viewed the

20 messages until then.

Summary of the Invention

The present invention is accomplished to solve the above problems. Therefore, an object of

25 the present invention is to provide a selective call radio apparatus with an improved message display function, in which the user can

understand that a displayed message is the latest
one, when the latest message is received and
displayed during display of other message.

Another object of the present invention is
5 to provide a selective call radio apparatus with
an improved message display function, in which
messages can be effectively displayed.

In order to achieve an aspect of the
present invention, a method of displaying
10 messages in a selective call radio apparatus
includes the steps of:

displaying messages, which are already
received, on a display unit in a first display
attribute in a message display mode in response
15 to a display instruction;

when a new message is received during the
display of the messages, temporarily stopping the
display of the messages on the display unit in
the message display mode; and

20 displaying the new message on the display
unit in a second display attribute different from
the first display attribute.

The second display attribute may be a color
inversion or a highlighted display.

25 Also, the messages may be displayed on the
display unit in an order in the first display
attribute in the message display mode. In this

case, the display of the new message is stopped
in response to a display continuation instruction,
and then remaining ones of the messages are
displayed in the order in the first display
5   attribute in the message display mode, after the
stop of the display of the new message.

In the above, the order may be an order of
reception of the messages. In this case, each of
the messages is received and stored the received
10   in a memory in the order of reception of the
messages. Thus, the messages are sequentially
read out from the memory in the order of
reception of the messages.

Also, each of the messages may be received
15   and stored in a memory together with a reception
time. Thus, the messages are sequentially read
out from the memory based on the reception times
of the messages. In this case, the messages may
be sequentially read out from the memory based on
20   the reception times of the messages and a
reference time. The reference time may be
designated. In this case, the reference time and
the reception time of each of the messages are
compared with each other and ones of the messages
25   previous to the reference time may be
sequentially read out from the memory.

In order to achieve another aspect of the

present invention, a selective call radio
apparatus includes a display unit, a storage unit
for storing messages, an operation unit used to
input instructions and data, a message receiving
5   unit, and a control unit. The control unit reads
out the messages from the storage unit to display
on the display unit in a first display attribute
in a message display mode in response to a
display instruction supplied from the operation
10 unit. The control unit displays a new messages on
the display unit in a second display attribute
different from the first display attribute when
the new message is received by the message
receiving unit during the display of the messages.

15   The control unit displays the messages on
the display unit in an order of reception of the
messages in the first display attribute in the
message display mode. Also, the control unit
displays remaining ones of the messages in the
20 order of reception in the first display attribute,
in response to a display continuation instruction
supplied from the operation unit. In this case,
the control unit sequentially stores the messages
received by the message receiving unit in the
25 storage unit in the order of reception of the
messages. The control unit includes a read
pointer and a write pointer, and stores the

message received by the message receiving unit in
the storage unit using the write pointer and
sequentially reads the messages from the storage
unit using read pointer.

5   Also, the control unit may include a timer
and a reference time register for holding a
reference time. In this case, the control unit
stores the message received by the message
receiving unit in the storage unit together with
10 a reception time from the timer, and sequentially
reads out the messages from the storage unit
based on the reception times of the messages and
the reference time. The control unit sets the
reference time in the reference time register
15 when the reference time is supplied from the
operation unit. The control unit sequentially
reads ones of the messages previous to the
reference time from the storage unit.

20   **Brief Description of the Drawings**
          Fig. 1 is a diagram to explain a
conventional message display function;
          Fig. 2 is a block diagram illustrating the
structure of a selective call radio apparatus
25 with a message display function according to an
embodiment of the present invention;
          Fig. 3 is a diagram to explain the message

display function according to the embodiment of the present invention; and

Figs. 4 and 5 are flowcharts showing a message display operation according to the embodiment of the present invention.

Description of the Preferred Embodiments

A selective call radio apparatus of the present invention will be described below in detail with reference to the attached drawings.

Fig. 2 is a block diagram illustrating the structure of the selective call radio apparatus with a message display function such as a pager according to the embodiment of the present invention. Referring to Fig. 1, the selective call radio apparatus according to the embodiment of the present invention is composed of an antenna 1, a radio section 2, a waveform shaping circuit 3, a control section 4, a rewritable ROM (Read-Only Memory) 5, a RAM (Random Access Memory) 6, a display driver 7, a display section 8, amplifier circuits 9 and 11, a speaker 10, an LED (Light-Emitting Diode) 12, a power supply switch 13, a clock generating circuit 14, a power supply 15, a switch 16 and a counter 17 as a read pointer. The power supply switch 13 and the switch 16 are contained in an operation section

(not shown) which is used to input instruction
and data.

The antenna 1 receives a radio signal. The
received radio signal is amplified and
5 demodulated by the radio section 2. The
demodulated signal is converted by the waveform
shaping circuit 3 to one having such a waveform
as can be read by the control section 4.

The control section 4 includes a write
10 pointer (not shown) and operates based on a
program stored in the ROM 5. The control section
4 compares its own call number, which has been
written in advance in the ROM 5, with the signal
supplied from the waveform shaping circuit 3.
15 When there is a coincidence between them, the
control section 4 controls the amplifier circuit
9 to drive the speaker 10 such that alarm sound
is sent out from the speaker 10. Also, the
control section 4 controls the amplifier circuit
20 10 to drive the LED 12 such that the LED 12 is
lighted. Thus, a call arrival is informed to the
user.

When the received radio signal contains a
message, the control section 4 stores the message
25 in the RAM 6 using the write pointer. Also, when
the message is displayed, the control section 4
reads out the message from the RAM 6 using the

read pointer and controls the display driver 7 to
drive the display section 8 such that the message
is displayed.

        In the selective call radio apparatus
5   according to the embodiment of the present
invention, the power supply is turned on in
response to the operation of the power supply
switch 13. At this time, the selective call radio
apparatus operates in accordance with the clock
10   signal supplied from the clock generating circuit
14, when the power supply 15 is turned on.
Message selection is performed using the switch
16, and the counter 17 counts messages read out
at the message readout time. The control section
15   4 reads messages stored in the RAM 6 using the
read pointer to display on the display section 8.
While the user is reading the messages
successively, the counter 17 counts how many
messages are read out.

20   When the latest message is received during
the reading operation of the messages, the
current message display is temporarily stopped or
interrupted. Then, the latest message is
displayed in such a way that it is
25   distinguishable from other messages. When the
display of the latest message is completed in
response to a display continuation instruction

supplied from the operation unit, the message
next to the message which has been displayed
immediately before the latest message is
displayed based on the count of the counter 17 as
5 the read pointer.

Fig. 3 is a diagram illustrating a message
display function according to the embodiment of
the present invention. A difference between the
message display function according to the
10 embodiment of the present invention and the
conventional message display function will now be
described with reference to Figs. 1, 2 and 3.

When the user reads out the messages, the
messages are displayed in the order of their
15 reception times, namely in the order from the
latest message up to the oldest message.
According to the embodiment of the present
invention, the messages are read out in the order
of a message #1 (101) → a message #2 (102) → a
20 message #3 (103) → …→ a message #m (104).

If the latest message is received during
the reading of the message #m (104), the display
of message #m is interrupted and the latest
message is displayed. The latest message (105) is
25 displayed in a color inversion so that the latest
message can be distinguished from the messages
which the user has viewed until then. Thus, the

latest message is displayed in a display
attribute different from that of the messages
which the user has viewed until then. The latest
message may be displayed in a highlighted display
5   or in boldface display or by way of varying the
typeface.

        When the user attempts to view the next
message to input a display continuation
instruction from the operation unit, the control
10 returns to the message display state in which the
user had viewed last. That is, following the
latest message, the message #m (106), a message
#m+1 (107), a message #m+2 (108) ... are
displayed in the described order.

15   Figs. 4 and 5 are flowcharts showing a
message display operation of the selective call
radio apparatus according to the embodiment of
the present invention. The message display
operation according to the embodiment of the
20 present invention will now be described with
reference to Figs. 2 to 5.

        According to the selective call radio
apparatus, a message wait screen is initially
displayed (a step S1 shown in Fig. 4). When
25 attempting to read the messages stored in the RAM
6, the user inputs a message display instruction
from the operation unit. At this time, the screen

is switched from the message wait screen to a message display screen (step S2 shown in Fig. 4). Then, the message #1 having the most recent reception time among the messages received up to

5 the present time is displayed (step S3 shown in Fig. 4).

After the above message #1 is displayed, it is determined whether the user wants to read the next message, based on a next message display

10 instruction. The next message display instruction is inputted as the operation of the switch 16 of the operation unit. When the user performs no operation (No at a step S4 shown in Fig. 4), a step S5 is executed. At the step S5, it is

15 determined whether a manual reset instruction as a message wait instruction is inputted through an operation of a reset switch (not shown) of the operation unit. If the manual reset instruction is not inputted (No at the step S5), the control

20 returns to the step S4. If the manual reset instruction is inputted (Yes at the step S5), the control returns to the step S1. Also, when a predetermined time elapses without any operation of the operation unit after the message #1 has

25 been displayed, an automatic reset instruction is issued as the message wait instruction (Yes at the step S5). As a result, the control returns to

the step S1.

On the other hand, when wanting to read the
next message, the user performs the switching
operation of the switch 16 while the message #1
5   is displayed (Yes at the step S4), so that the
counter 17 is incremented by "1". Then, message
#2 having reception time recent next to the
message #1 is read from the RAM 6, and displayed
on the display section 8 through the display
10 driver 7 (a step S6 shown in Fig. 3).

After the message #2 is displayed, it is
determined whether the user wants to read the
next message. When the user performs no operation
(No at the step S7 shown in Fig. 4), a step S8 is
15 executed, as in the above step S4. At the step S8,
it is determined whether a manual reset
instruction as the message wait instruction is
inputted from the operation unit. If the manual
reset instruction is not inputted (No at the step
20 S8), the control returns to the step S7. If the
manual reset instruction is inputted (Yes at the
step S8), the control returns to the step S1.
Also, when a predetermined time elapses without
any operation of the operation unit after the
25 message #2 has been displayed, the automatic
reset instruction is issued as the message wait
instruction (Yes at the step S8), as in the step

S5. As a result, the control returns to the step S1.

On the other hand, when wanting to read the next message, the user performs the switching operation of the switch 16 while the message #2 is displayed (Yes at the step S7), the counter 17 is incremented by "1". Then, message #3 having reception time recent next to the message #2 is read from the RAM 6, and displayed on the display section 8 through the display driver 7.

It is supposed that the latest message is received while a message #m is displayed at a step S9 through the above-mentioned operations. If the latest message is not received (No at a step S10 shown in Fig. 5), the control advances to a step S11. In case where the latest message has been received, the control advances to a step S13 to display the latest message on the display section 8. The latest message is displayed in a display attribute different from those of the messages #1 to #m to be distinguishable from other messages (the step S13 shown in Fig. 5).

After the latest message is displayed, it is determined whether the user wants to read the next message. When the user performs no operation (No at a step S14 shown in Fig. 5), a step S15 is executed, as in the above step S4. At the step

S15, it is determined whether the manual reset
instruction as the message wait instruction is
inputted from the operation unit. If the manual
reset instruction is not inputted (No at the step
5 S15), the control returns to the step S14. If the
manual reset instruction is inputted (Yes at the
step S15), the control advances to the step S1.
Also, when the predetermined time elapses without
any operation of the operation unit after the
10 latest message has been displayed, the automatic
reset instruction is issued as the message wait
instruction (Yes at the step S15), as in the step
S5. As a result, the control advances to the step
S1.

15   On the other hand, when wanting to read the
next message, the user performs the switching
operation of the switch 16 while the latest
message is displayed (Yes at the step S14), the
counter 17 is incremented by "1". In this case,
20 however, since the latest message is stored in
the RAM 6, the number of messages stored in the
RAM 6 increases by "1". Therefore, a message #m
is read out from the RAM 6 again and displayed on
the display section 8 through the display driver
25 7 (a step S16 shown in Fig. 5). Thus, the
switching operation of the switch 16 functions as
a display continuation instruction.

After the message #m is displayed, it is
determined whether the user wants to read the
next message. When the user performs no operation
(No at the step S17 shown in Fig. 5), a step S18
is executed, as in the above step S4. At the step
S18, it is determined whether the manual reset
instruction as the message wait instruction is
inputted from the operation unit. If the manual
reset instruction is not inputted (No at the step
S18), the control returns to the step S17. If the
manual reset instruction is inputted (Yes at the
step S18), the control returns to the step S1.
Also, when a predetermined time elapses without
any operation of the operation unit after the
message #m has been displayed, the automatic
reset instruction is issued as the message wait
instruction (Yes at the step S18), as in the step
S5. As a result, the control returns to the step
S1.

On the other hand, when wanting to read the
next message, the user performs the switching
operation of the switch 16 while the message #m
is displayed (Yes at the step S17), the counter
17 is incremented by "1". Then, message #(m+1)
having reception time recent next to the message
#m is read from the RAM 6, and displayed on the
display section 8 through the display driver 7.

In this way, if the user wants to continue the message display, the same operations as those described above are repeated such that the message #m+1, the message #m+2, … are displayed
5 on the display section 8 in the order of recentness of their reception times.

AS described above, in the case where no latest message is received during the message display (the step S10 shown in Fig. 5), the
10 control advances to the step S11. In this case, after the message #m is displayed, it is determined whether the user wants to read the next message. When the user performs no operation (No at the step S11 shown in Fig. 5), a step S12
15 is executed, as in the above step S4. At the step S12, it is determined whether the manual reset instruction as the message wait instruction is inputted from the operation unit. If the manual reset instruction is not inputted (No at the step
20 S12), the control returns to the step S10. If the manual reset instruction is inputted (Yes at the step S12), the control returns to the step S1. Also, when the predetermined time elapses without any operation of the operation unit after the
25 message #m has been displayed, the automatic reset instruction is issued as the message wait instruction (Yes at the step S12), as in the step

S5. As a result, the control returns to the step S1.

On the other hand, when wanting to read the next message, the user performs the switching

5   operation of the switch 16 while the message #m is displayed (Yes at the step S11), the counter 17 is incremented by "1". Then, the control advance to a step S19 to read message #(m+1) having reception time recent next to the message

10 #m from the RAM 6 to display on the display section 8 through the display driver 7.

When the messages from message #1 to the last message #n in this case have been all read in the above-described manner (a step S20 shown

15 in Fig. 5), the message display operation is terminated and the control returns to the initial wait screen at the step S1 (a step S21 shown in Fig. 5). If the remaining messages are present, the same operations as those of the step S9 to

20 S19 are repeated.

Thus, under the condition that the ROM 6 contains n messages stored therein, if the latest message is received at the time the user has read the m messages from message #1 to message #m, the

25 latest message is firstly displayed on the display section 8 as shown in Fig. 3. At this time point, the number of messages stored in the

ROM 6 becomes n+1. Therefore, when the user

attempts to read the next message by operating

the switch 16 thereafter, the (m+1)-th message,

which is the message #m which has been read

5 immediately before the latest message, is

displayed.

Therefore, even if the latest message is

received while the user reads the messages, the

latest message is displayed on the display

10 section 8 so as to be distinguishable from other

messages, under the control performed by the

control section 4. Since the latest message is

displayed so that the user can clearly

distinguish the latest message from other

15 messages, the user can read the latest message

without confusion with the messages received in

the past.

Furthermore, when the user desires to read

the message next to the latest message, the user

20 can read the message #m which has been read

immediately before the latest message. This

eliminates the inconveniences of having to

repeatedly read the messages which the user has

read once.

25 In the description, the messages stored in

the RAM 6 are all displayed on the display

section 8. However, when the message display

instruction is inputted, a display number may

inputted from the operation unit to the counter

17 at the same time. In this case, the control

section 4 controls the display driver 7 to drive

5   the display section 8 such that the message

having the display number is first displayed and

then the subsequent messages are displayed.

Also, the control section 4 may have a

reception time register and timer (both not

10 shown) instead of the counter 17. In this case,

when a message is received, the control section 4

stores the message in the RAM 6 together with a

reception time. Also, the control section 4 reads

the messages stored in the RAM 6 in order based

15 on the reception times of the messages. When the

message is displayed and read, the reception time

the displayed message is held and next the

message having the reception time most closest to

the held reception time and older than the held

20 reception time is displayed and read.

In this case, as in the above, a reference

time may be set in the reception time register.

The control section 4 controls the display driver

7 to drive the display section 8 such that the

25 message having the reception time most closest to

the reference reception time and older than the

reference reception time is first displayed and

then the subsequent messages are displayed.

As described above, according to the selective call radio apparatus with the message display function of the present invention, when 5 the latest message is received during the display of the stored messages, the latest message is displayed so as to be distinguishable from the stored messages. This makes it possible for the user to understand that when the latest message 10 is received and displayed, the displayed message is the latest one.

What is claimed is:

1.   A method of displaying messages in a selective call radio apparatus comprising the steps of:

displaying messages, which are already received, on a display unit in a first display attribute in a message display mode in response to a display instruction;

when a new message is received during the display of said messages, temporarily stopping the display of said messages on said display unit in said message display mode; and

displaying said new message on said display unit in a second display attribute different from said first display attribute.

2.   A method according to claim 1, wherein said second display attribute is a color inversion.

3.   A method according to claim 1, wherein said second display attribute is a highlighted display.

4.   A method according to claim 1, wherein said step of displaying messages includes displaying said messages on said display unit in an order in said first display attribute in said message display mode, and

wherein said method further comprises the step of:

stopping the display of said new message in response to a display continuation instruction; and

displaying remaining ones of said messages in the order in said first display attribute in said message display mode, after the stop of the display of said new message.

5.   A method according to claim 4, wherein the order is an order of reception of said messages.

6.   A method according to claim 5, further comprising the step of:

receiving each of said messages;

sequentially storing the received messages in a memory in the order of reception of said messages, and

wherein said step of displaying messages includes sequentially reading out said messages from said memory in the order of reception of said messages.

7.   A method according to claim 4, further comprising the step of:

receiving each of said messages;

storing the received message in a memory
5   together with a reception time, and

wherein said step of displaying messages
includes sequentially reading out said messages
from said memory based on the reception times of
said messages.

8.   A method according to claim 7, wherein said
step of displaying messages includes sequentially
reading out said messages from said memory based
on the reception times of said messages and a
5   reference time, and

wherein said method further comprises the
step of:

designating said reference time.

9.   A method according to claim 8, wherein said
reading step includes:

comparing said reference time and the
reception time of each of said messages;
5   sequentially reading ones of said messages
previous to said reference time.

10.   A selective call radio apparatus
comprising:

a display unit;

a storage unit for storing messages;

5   an operation unit used to input

instructions and data;

         a message receiving unit; and

         a control unit for reading out said

messages from said storage unit to display on

10   said display unit in a first display attribute in

a message display mode in response to a display

instruction supplied from said operation unit,

for displaying a new messages on said display

unit in a second display attribute different from

15   said first display attribute when said new

message is received by said message receiving

unit during the display of said messages.

11.   A selective call radio apparatus according

to claim 10, wherein said second display

attribute is a color inversion.

12.   A selective call radio apparatus according

to claim 10, wherein said second display

attribute is a highlighted display.

13.   A selective call radio apparatus according

to claim 10, wherein said control unit displays

said messages on said display unit in an order of

reception of said messages in said first display

5   attribute in said message display mode, and

display remaining ones of said messages in the
order of reception in said first display
attribute, in response to a display continuation
instruction supplied from said operation unit.

14.   A selective call radio apparatus according
to claim 13, wherein said control unit
sequentially stores the messages received by said
message receiving unit in said storage unit in
5 the order of reception of said messages.

15.   A selective call radio apparatus according
to claim 14, wherein said control unit includes a
read pointer and a write pointer, and stores the
message received by said message receiving unit
5 in said storage unit using said write pointer and
sequentially reads said messages from said
storage unit using read pointer.

16.   A selective call radio apparatus according
to claim 10, wherein said control unit includes a
timer and a reference time register for holding a
reference time, and
5   wherein said control unit stores the
message received by said message receiving unit
in said storage unit together with a reception
time from said timer, and sequentially reads out

said messages from said storage unit based on the
10   reception times of said messages and said
reference time.

17.   A selective call radio apparatus according
to claim 16, wherein said control unit sets said
reference time in said reference time register
when said reference time is supplied from said
5   operation unit.

18.   A selective call radio apparatus according
to claim 17, wherein said control unit
sequentially reads ones of said messages previous
to said reference time from said storage unit.

Abstract of the Disclosure

A selective call radio apparatus includes a
display unit, a storage unit for storing messages,
an operation unit used to input instructions and
5   data, a message receiving unit, and a control
unit. The control unit reads out the messages
from the storage unit to display on the display
unit in a first display attribute in a message
display mode in response to a display instruction
10   supplied from the operation unit. Also, the
control unit displays a new messages on the
display unit in a second display attribute
different from the first display attribute when
the new message is received by the message
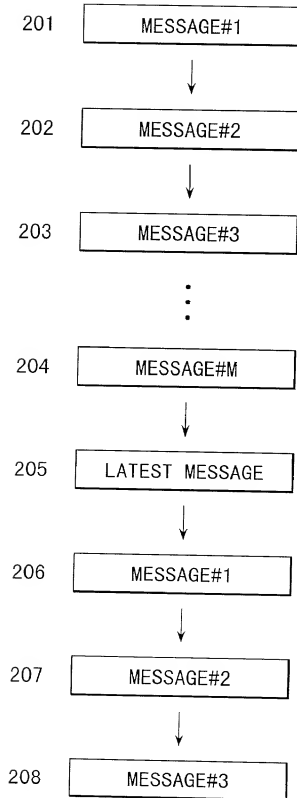15   receiving unit during the display of the messages.

FIG. 1

201   MESSAGE#1

↓

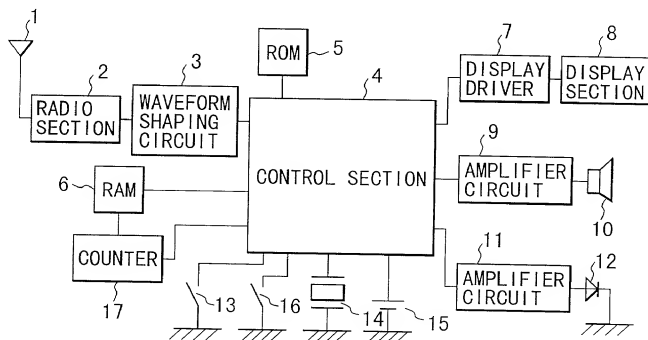202   MESSAGE#2

↓

203   MESSAGE#3

⋮

204   MESSAGE#M

↓

205   LATEST MESSAGE

↓

206   MESSAGE#1

↓

207   MESSAGE#2

↓

208   MESSAGE#3

FIG. 2

FIG. 3

101   MESSAGE#1

↓

102   MESSAGE#2

↓

103   MESSAGE#3

⋮

104   MESSAGE#M

↓

105   LATEST MESSAGE

↓

106   MESSAGE#M

↓

107   MESSAGE#M+1

↓

108   MESSAGE#M+2

FIG. 4

START

B

DISPLAY WAIT SCREEN — S1

SWITCH FROM WAIT SCREEN
TO MESSAGE SCREEN — S2

DISPLAY MESSAGE#1 — S3

NEXT MESSAGE:
TO BE VIEWED? — S4

NO

MR OR AR? — S5

NO

YES

YES

DISPLAY MESSAGE#2 — S6

NEXT MESSAGE:
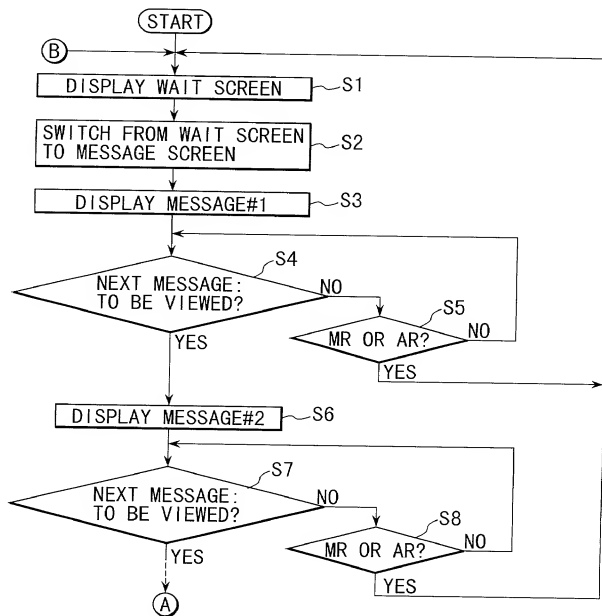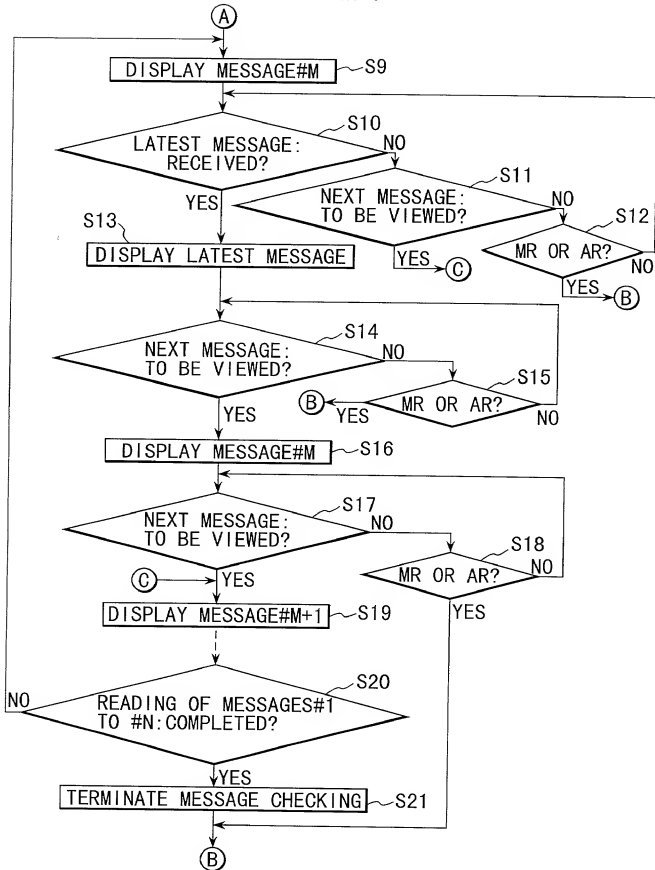TO BE VIEWED? — S7

NO

MR OR AR? — S8

NO

YES

YES

A
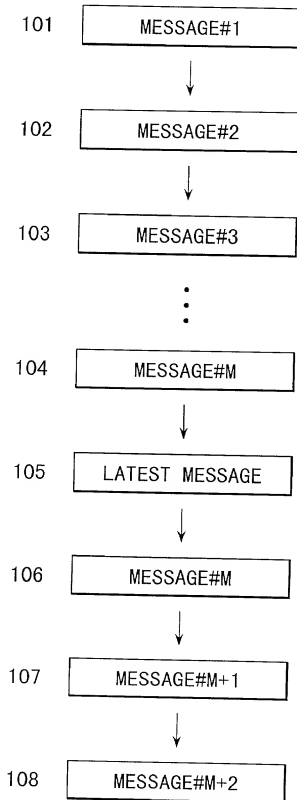
FIG. 5

Docket No.
12407

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

  SELECTIVE CALL RADIO APPARATUS WITH IMPROVED DISPLAY FUNCTION

the specification of which

(check one)

☒ is attached hereto.

☐ was filed on _____ as United States Application No. or PCT International Application Number _____

☐ and was amended on _____

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

035301/1998	Japan	18/02/1998	☐
(Number)	(Country)	(Day/Month/Year Filed)	
			☐
(Number)	(Country)	(Day/Month/Year Filed)	
			☐
(Number)	(Country)	(Day/Month/Year Filed)	

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)	(Filing Date)

(Application Serial No.)	(Filing Date)

(Application Serial No.)	(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.   *(list name and registration number)*

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